

Service Manual

Radio
RF-1410LBS

**FM/LW/MW/SW 4-BAND
PORTABLE RADIO**



■ SPECIFICATIONS

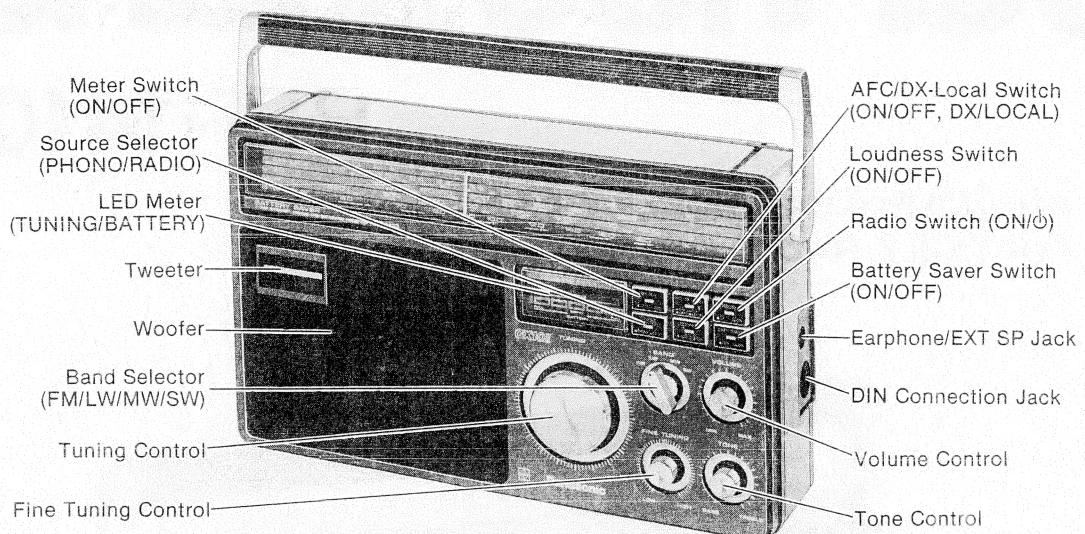
Frequency Range:	FM 87.5~108MHz LW 150~285kHz (2000~1060m) MW 525~1610kHz (571~186m) SW 5.9~18MHz (50.8~16.7m)	Power Consumption: Speakers: 7W at 120V (AC Only) Woofer; 12cm (5") PM Dynamic Speaker
Intermediate Frequency:	FM 10.7MHz	Tweeter; 3cm (1-3/16") PM Dynamic Speaker
Sensitivity:	AM (LW, MW & SW) 455kHz FM 1.6µV for 50mW Output LW 60µV/m for 50mW Output MW 30µV/m for 50mW Output SW 6µV for 50mW Output	Dimensions: 11-3/8"(Wide)×7"(High)×3-3/16" (Deep) (289×177×80)mm
Power Source:	AC 110~125/220~240V 50/60Hz or DC 7.5V (Five "D" Size Flashlight Batteries) (National UM-1 or equivalent)	Weight: 4 lb. 6.5 oz. (2kg) without batteries Impedance: Speaker 8Ω Earphone Jack 8Ω

Specifications are subject to change without notice.

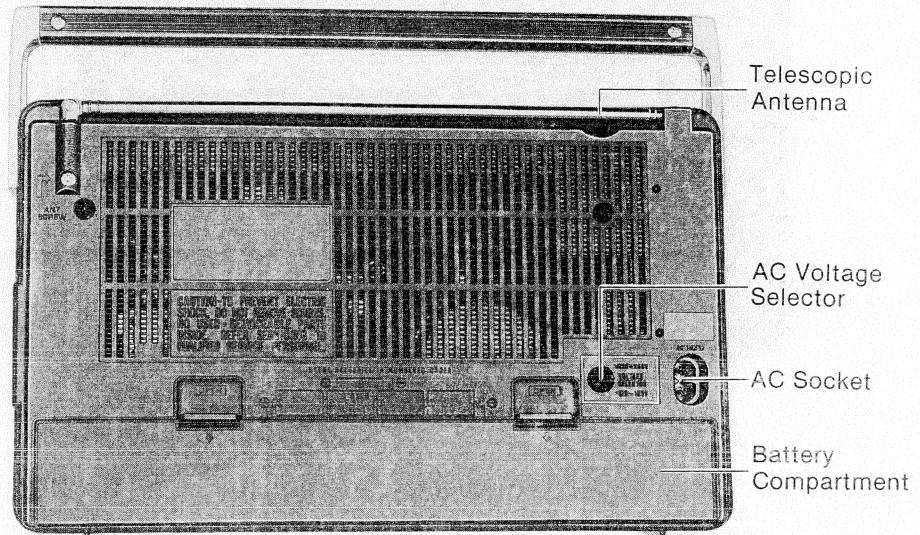
 **Panasonic**

Matsushita Electric Trading Co., Ltd.
P.O. Box 288, Central Osaka Japan

LOCATION OF CONTROLS AND COMPONENTS

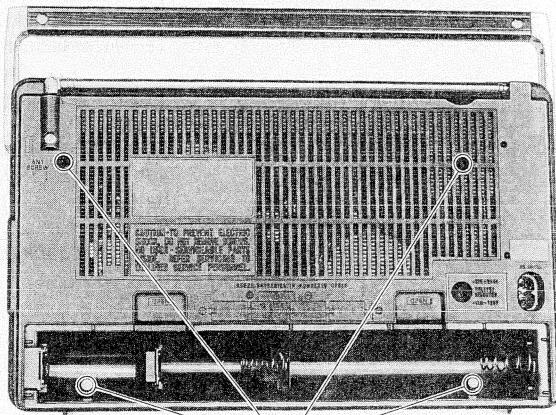
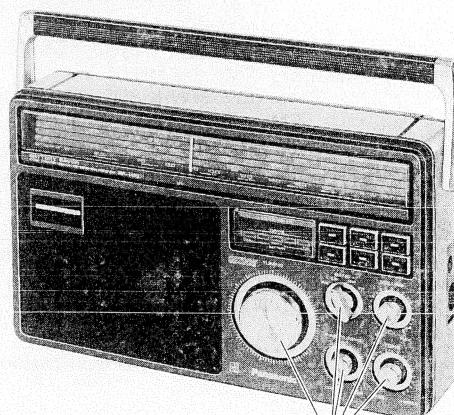


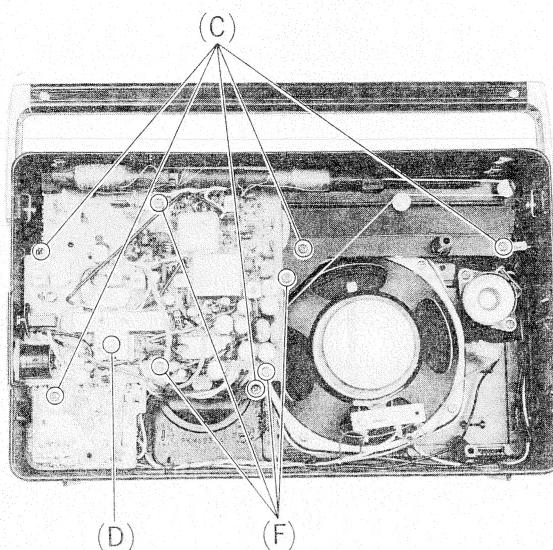
[Fig. 1]



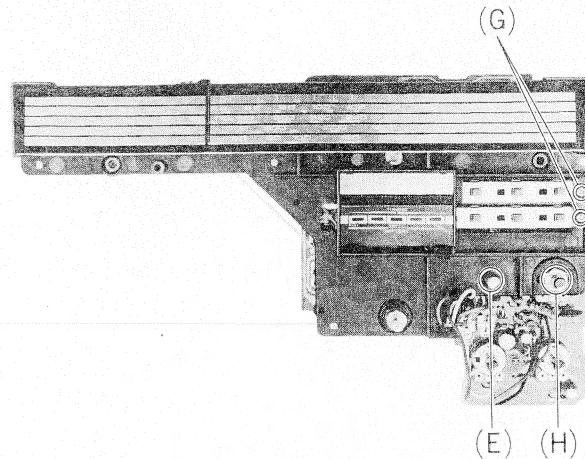
[Fig. 2]

DISASSEMBLY INSTRUCTION

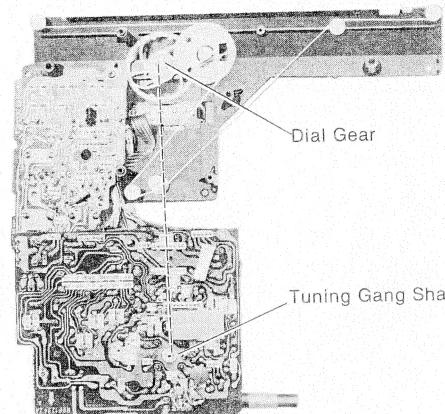
(A)
[Fig. 3](B)
[Fig. 4]



[Fig. 5]



[Fig. 6]



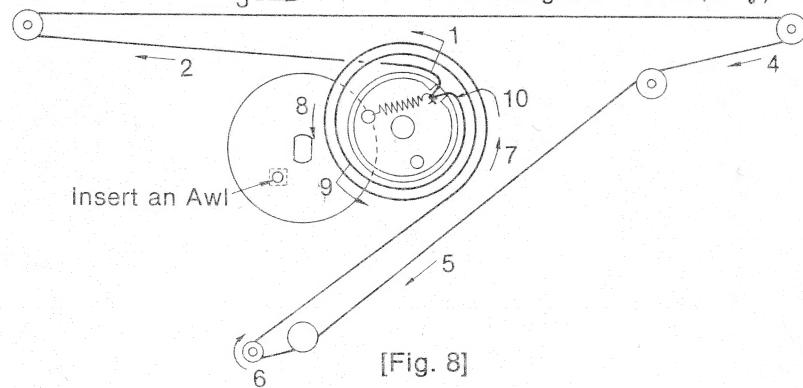
[Fig. 7]

Procedure	To remove —.	Remove —.	Shown in Fig. —.
1	Chassis	Screws (3×35)(A)×4	3
2		Knobs(B)×5	4
3		Red Screws (3×12)(C)×5	5
4	Printed Circuit Board	Circlip(D)×1	5
5		Band Switch Shaft(E)×1	6
6		Screws (3×10)(F)×4	5
7		Screws (3×6)(G)×2	6
8		Nut (8φ)(H)×1	6

Notes:

Turn tuning gang shaft to fully counter-clockwise.

Insert the tuning gang shaft in the hole of dial gear as shown in fig. 7.

DIAL THREADINGCord length is 140cm (55 $\frac{1}{8}$ ')

[Fig. 8]

ALIGNMENTS

■ ALIGNMENT INSTRUCTION

READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

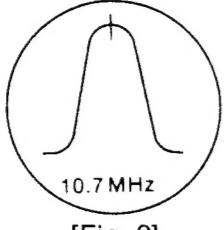
1. Set radio switch to ON.
2. Set volume control to maximum.
3. Set tone control to treble.
4. Set band switch to MW, LW, SW or FM.
5. Set meter switch to OFF.
6. Set AFC/DX-LOCAL switch to DX (AM) and OFF (FM).
7. Set source selector to radio.
8. Set loudness switch to OFF.
9. Set power source voltage to 7.5V DC.
10. Output of signal generator should be no higher than necessary to obtain an output reading.

■ LW, MW, AND SW ALIGNMENT

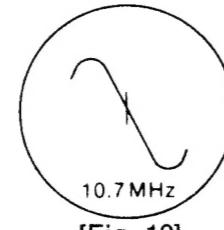
BAND	SIGNAL GENERATOR or SWEEP GENERATOR		RADIO DIAL SETTING	INDICATOR (ELECTRONICS VOLTMETER or SCOPE)	ADJUSTMENT	REMARKS
	CONNECTIONS	FREQUENCY				
AM IF ALIGNMENT						
(1) MW	Fashion loop of several turns of wire and radiate signal into loop of receiver.	455kHz 30% Mod. at 400Hz	Point of non-interference.	Output meter across voice coil.	T2 (AM 1st IFT) T3 (AM 2nd IFT)	Adjust for maximum output.
LW-RF ALIGNMENT						
(2) LW	"	145kHz	145kHz [19mm(3/4")]	Output meter across voice coil.	L8 (LW OSC Coil) (*1) L5 (LW ANT Coil)	Adjust for maximum output. Adjust L5 by moving coil bobbin along ferrite core.
(3) LW	"	285kHz	285kHz [160mm(65/16")]	"	CT3 (LW OSC Trimmer) CT1 (LW ANT Trimmer)	Adjust for maximum output. Repeat steps (2) and (3).
(*1) Cement antenna bobbin with wax after completing alignment.						
MW-RF ALIGNMENT						
(4) MW	"	550kHz	550kHz [19mm(3/4")]	Output meter across voice coil.	L9 (MW OSC Coil) (*2) L6 (MW ANT Coil)	Adjust for maximum output. Adjust L6 by moving coil bobbin along ferrite core.
(5) MW	"	1,500kHz	1,500kHz [160mm(65/16")]	"	CT8 (MW OSC Trimmer) CT7 (MW ANT Trimmer)	Adjust for maximum output. Repeat steps (4) and (5).
(*2) Cement antenna bobbin with wax after completing alignment.						
SW-RF ALIGNMENT						
(6) SW	Connect to test point 1 through ceramic capacitor (10PF). Negative side to test point 2 .	5.9MHz	5.9MHz [11mm(7/16")]	Output meter across voice coil.	L10 (SW OSC Coil) L7 (SW ANT Coil)	Adjust for maximum output.
(7) SW	"	18MHz	18MHz [168mm(65/8")]	"	CT4 (SW OSC Trimmer) CT2 (SW ANT Trimmer)	Adjust for maximum output. Repeat steps (6) and (7).

■ FM IF ALIGNMENT

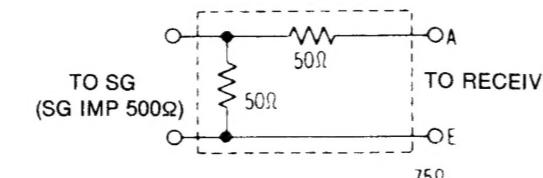
BAND	SIGNAL GENERATOR or SWEEP GENERATOR		RADIO DIAL SETTING	INDICATOR (VTVM or SCOPE)	ADJUSTMENT	REMARKS
	CONNECTIONS	FREQUENCY				
(1) FM	Connect to test point 3 through 0.001μF. Negative side to point 2 .	10.7MHz	Point of non-interference.	Connect vert. amp of scope to test point 5 . Negative side to test point 2 .	T1 (FM 1st)	Adjust for maximum amplitude. (Refer to Fig. 9.)
(2) FM	"	"	"	"	T4 (FM 2nd)	Adjust for maximum amplitude. (Refer to Fig. 10.)



[Fig. 9]



[Fig. 10]



[Fig. 11] FM Dummy Antenna

■ AFC, METER ALIGNMENT

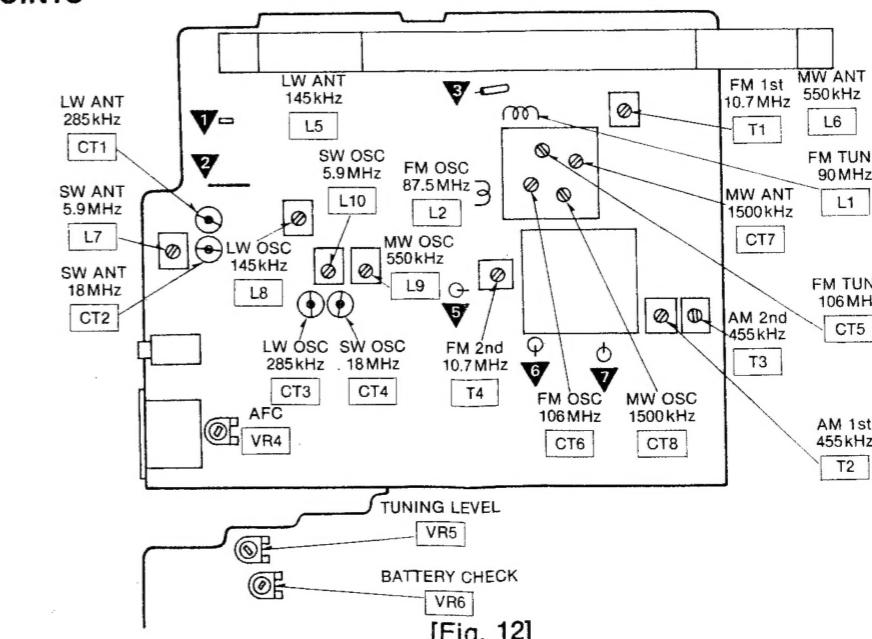
BAND	SIGNAL GENERATOR or SWEEP GENERATOR		RADIO DIAL SETTING	AC VTVM	DC VTVM	ADJUSTMENT	REMARKS
	CONNECTIONS	FREQUENCY					
AFC ALIGNMENT							
(1) FM	1 ... +	98MHz (10~15dB)	Tune to signal (AFC switch... ON)	Output meter across voice coil.	—	VR4	1. Set AFC switch to OFF. 2. Adjust VR4 for maximum output.
TUNING LEVEL ADJUSTMENT							
(2) FM	"	"	Tune to signal.	—	7 ... +	VR5	1. Turn VR6 to fully clockwise. 2. Adjust signal generator for 0.65~0.7V reading on DC VTVM. 3. Adjust VR5 so that 2nd LED begins to fade away.
BATTERY CHECK							
(3) FM	—	—	—	—	—	VR6	1. Set power source voltage to DC 4.5V. 2. Adjust VR6 so that 2nd LED begins to fade away.

■ FM RF ALIGNMENT

BAND	SIGNAL GENERATOR or SWEEP GENERATOR		RADIO DIAL SETTING	INDICATOR (VTVM or SCOPE)	ADJUSTMENT	REMARKS
	CONNECTIONS	FREQUENCY				
(1) FM	Connect to test point 1 through FM dummy antenna. (Refer to fig. 11).	87.5MHz	Variable capacitor fully closed.	Output meter across voice coil.	L2 (FM OSC Coil)	(*3) Adjust for maximum output.
(2) FM	"	90MHz [21mm(27/32)]	"	"	L1 (FM TUNE Coil)	(*3) Adjust for maximum output.
(3) FM	"	106MHz [150mm(529/32)]	"	"	CT6 (FM OSC Trimmer) CT5 (FM TUNE Trimmer)	(*3) Adjust for maximum output. Repeat steps (1)~(3).

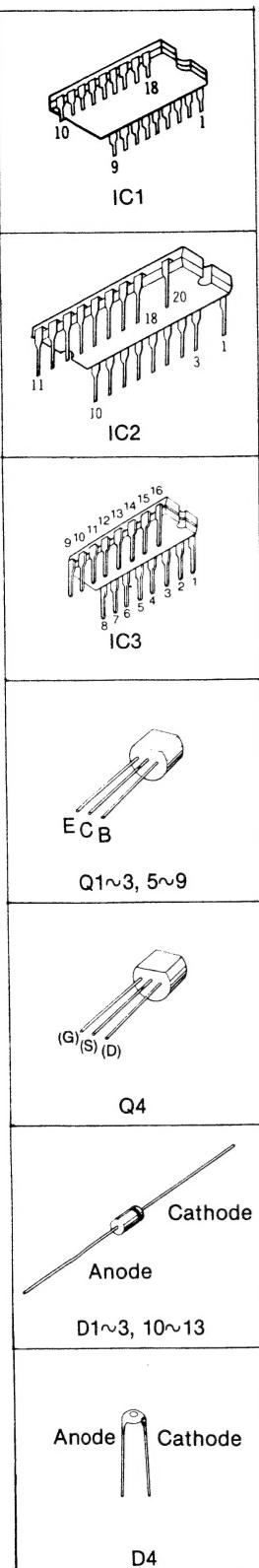
(*3) Three output responses will be present; proper tuning is the center frequency.

■ ALIGNMENT POINTS



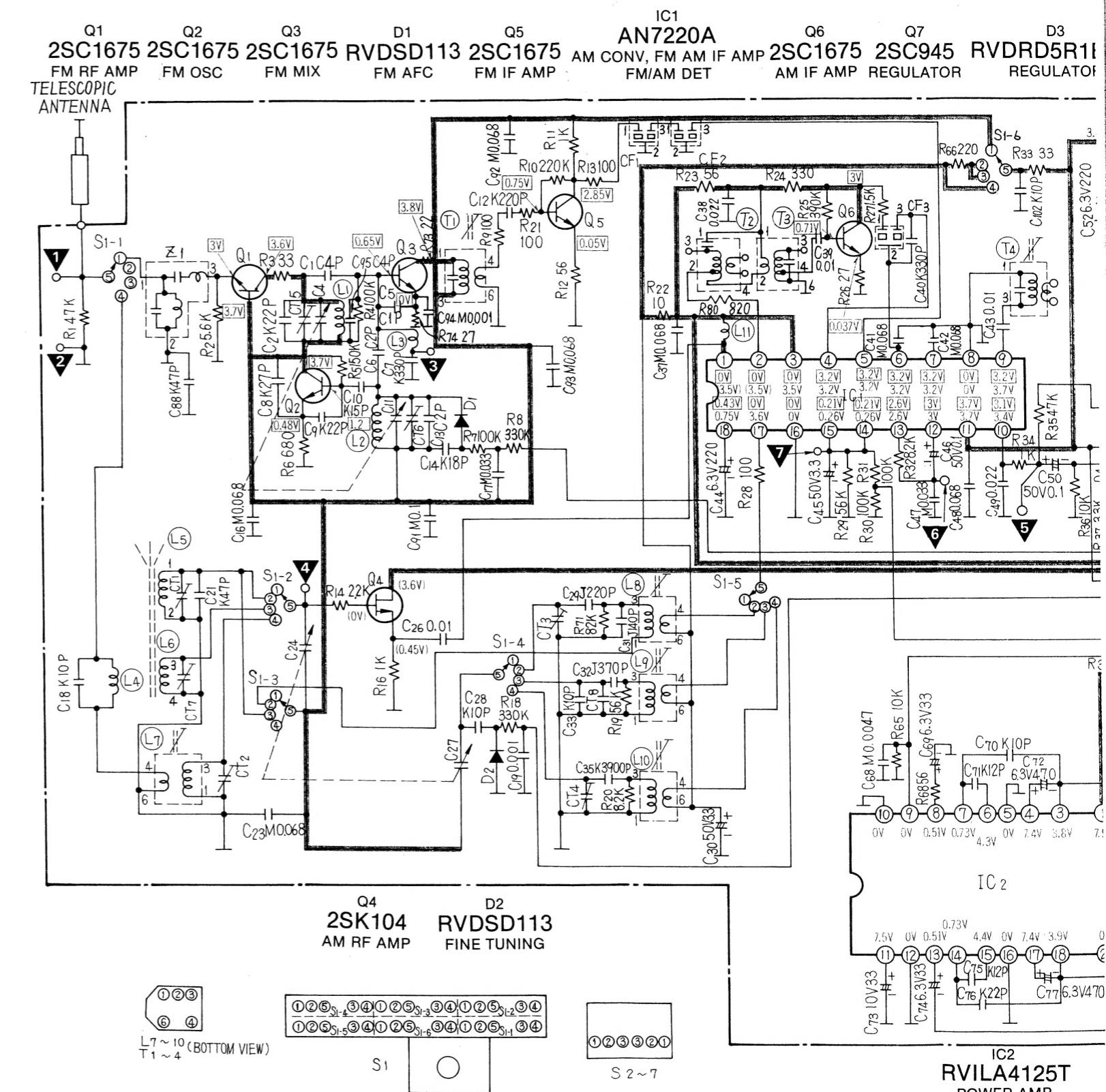
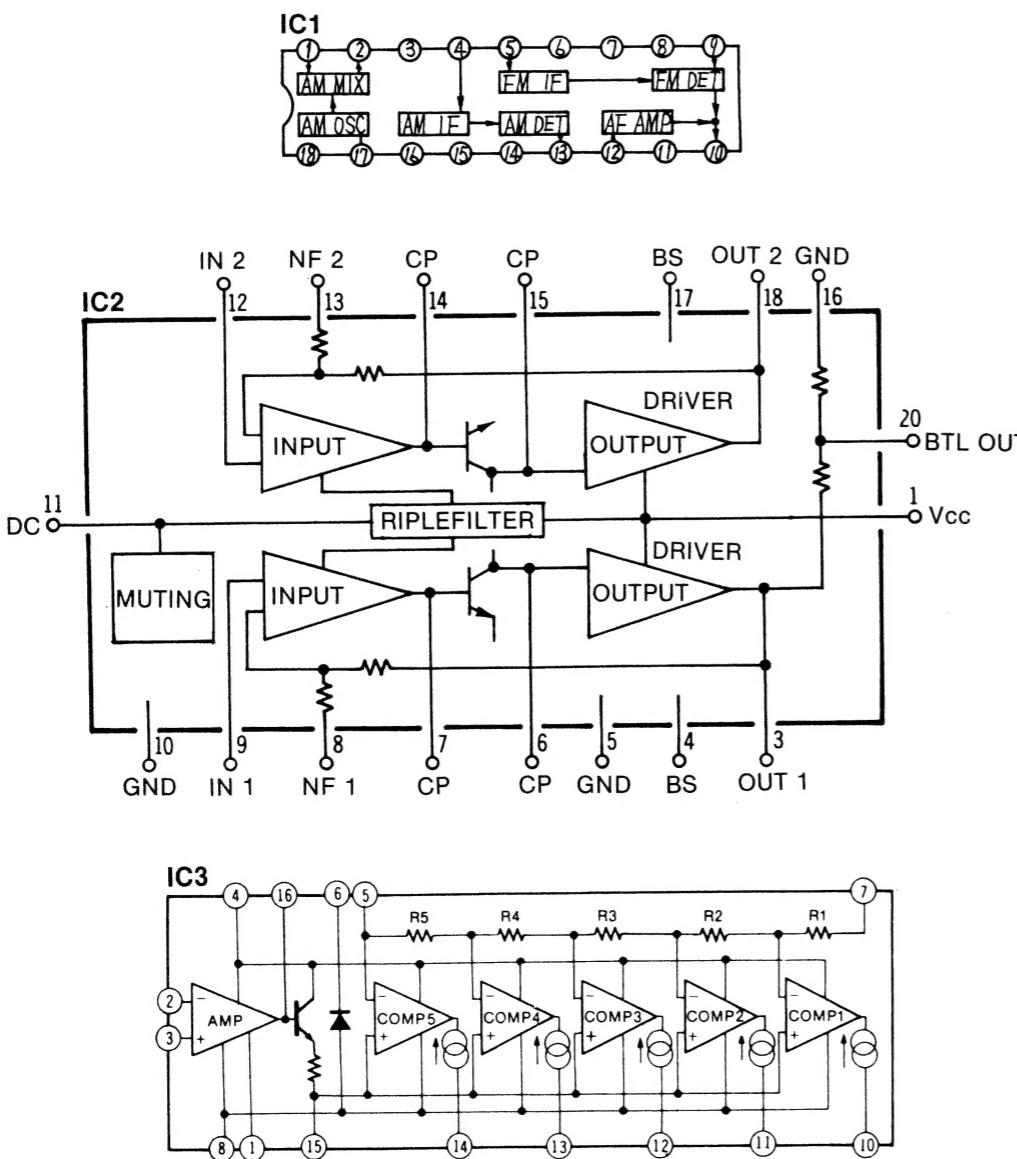
[Fig. 12]

SCHEMATIC DIAGRAM MODEL

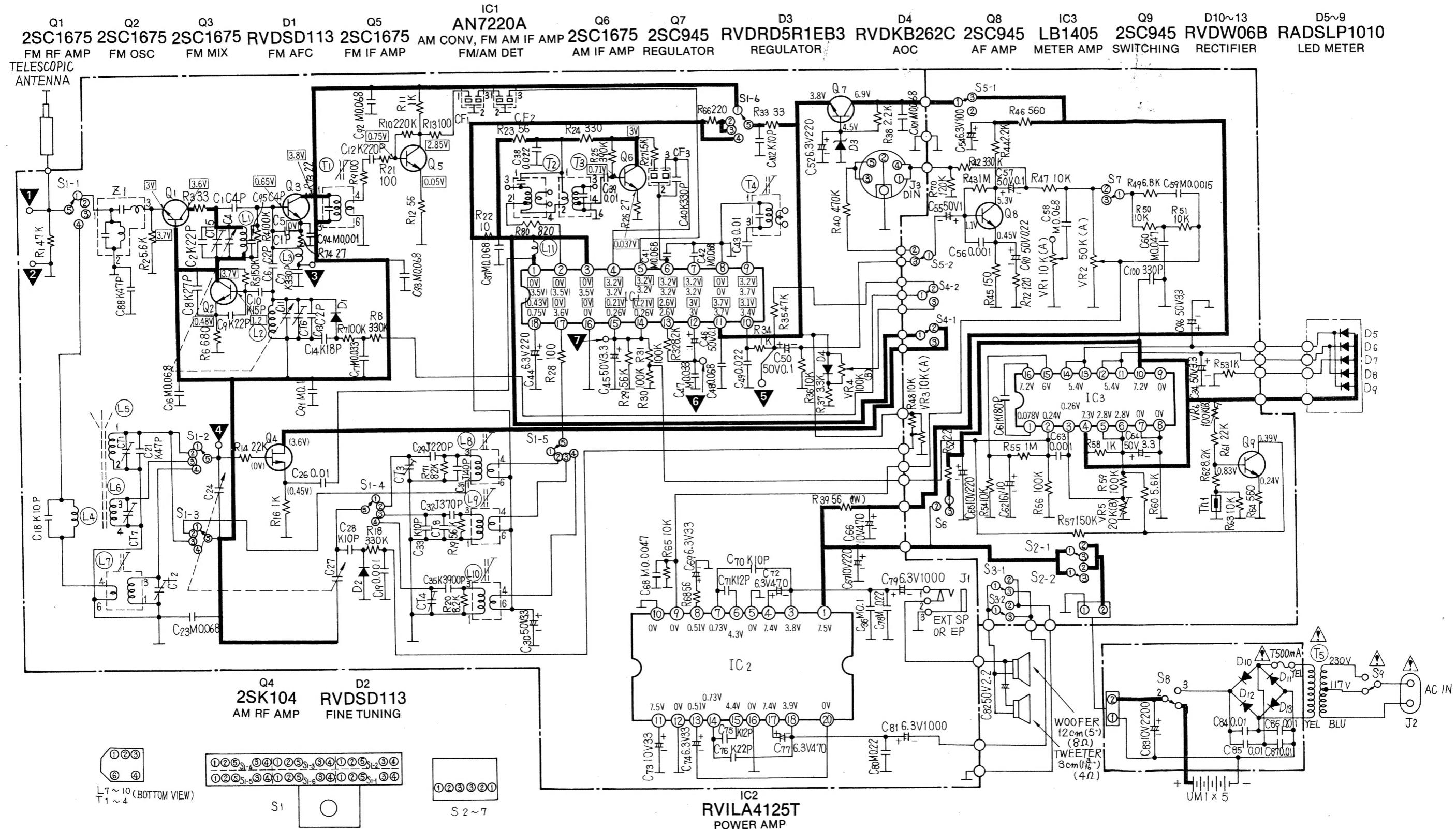


Notes:

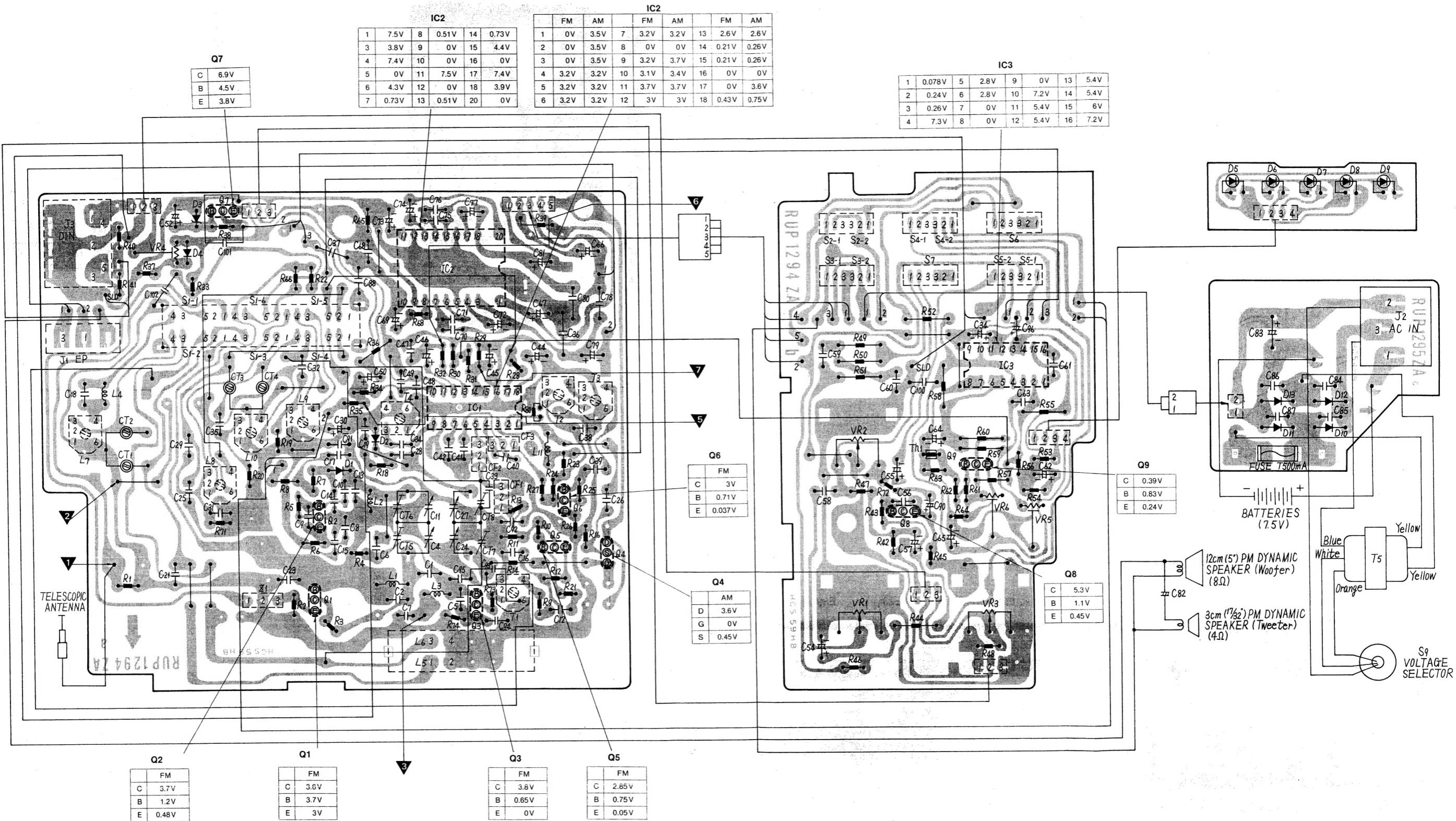
1. S1-1~S1-6: Band switch in "FM" position.
(1...FM, 2...LW, 3...MW, 4...SW)
2. S2-1, S2-2: Radio switch in "OFF" position.
(2...ON, 3...OFF)
3. S3-1, S3-2: Battery saver switch in "OFF" position.
(2...ON, 3...OFF)
4. S4-1, S4-2: AFC/DX-local switch in "ON/DX" position.
(2...ON/DX, 3...OFF/LOCAL)
5. S5-1, S5-2: Source switch in "RADIO" position.
(2...PHONO, 3...RADIO)
6. S6: Meter switch in "OFF" position.
(2...ON, 3...OFF)
7. S7: Loudness switch in "OFF" position.
(2...ON, 3...OFF)
8. S8: AC/DC switch in "DC" position.
9. S9: Voltage selector.
10. DC voltage measurements are taken with electronics voltmeter from negative terminal of battery.
- ...FM position, () ...AM position.
11. Battery current: No signal 47mA
Maximum output 530mA
12. △ indicates that only parts specified by the manufacturer be used for safety.



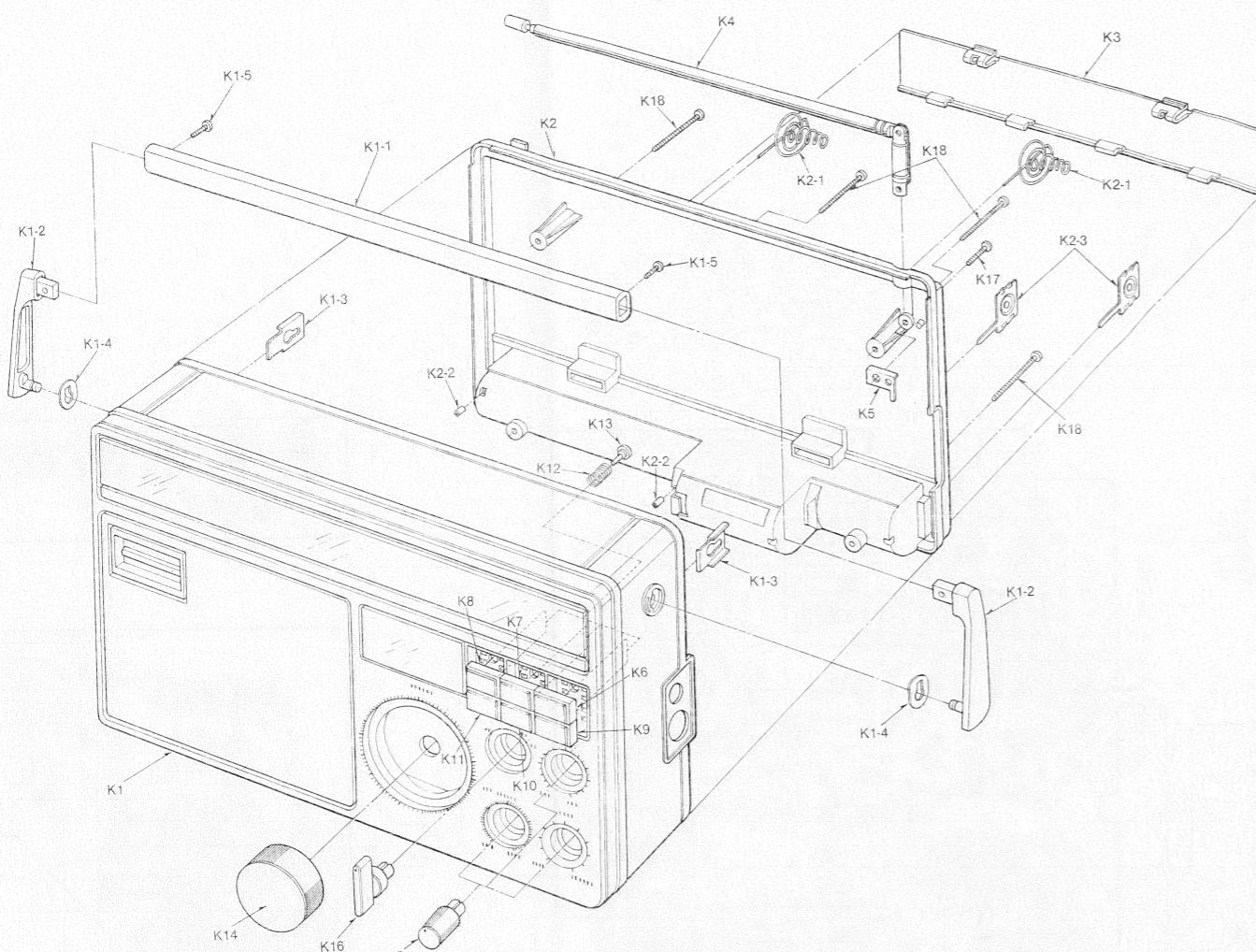
SCHEMATIC DIAGRAM MODEL RF-1410LBS



CIRCUIT BOARD WIRING VIEW MODEL RF-1410LBS

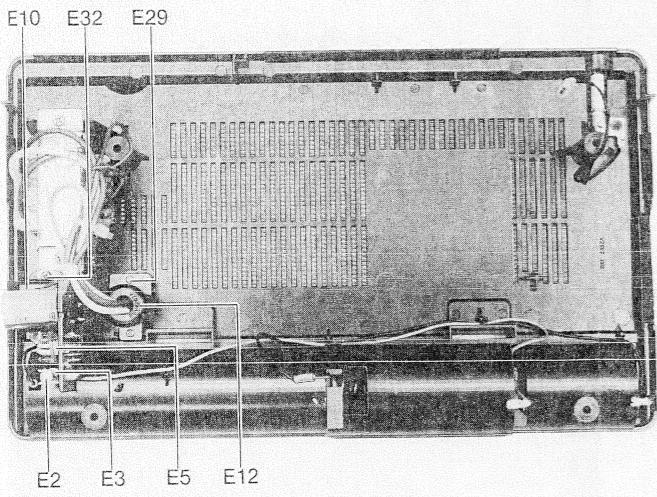


CABINET PARTS

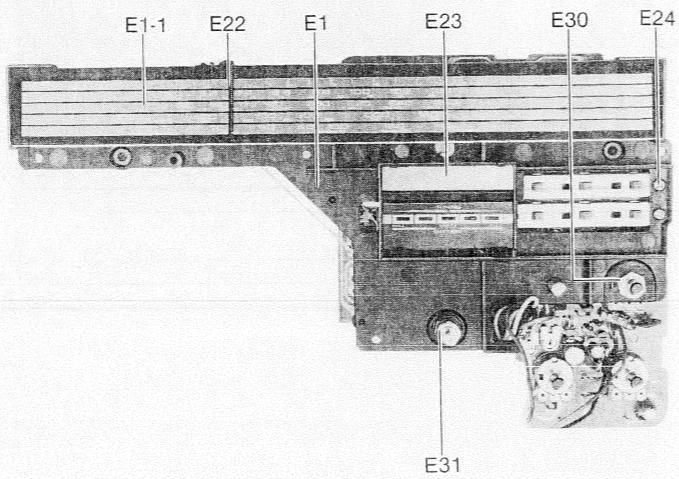


[Fig. 13]

ELECTRICAL PARTS



[Fig. 14]

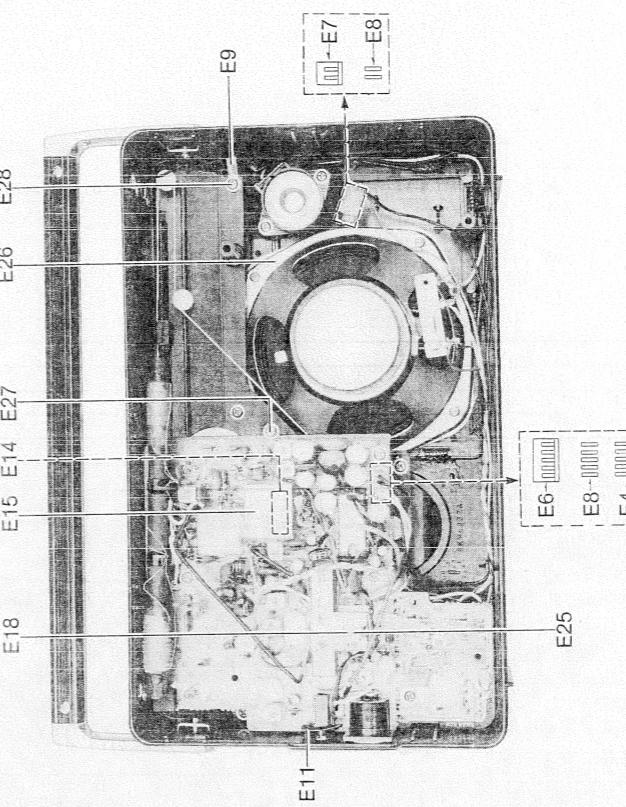


[Fig. 15]

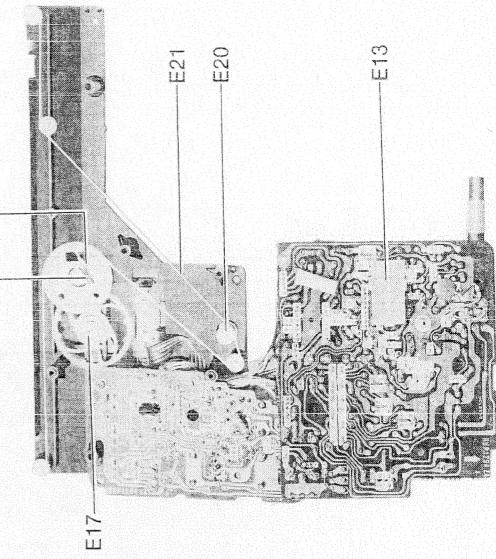
REPLACEMENT PARTS LIST Model RF-1410LBS
(RD8006-5105C)

NOTES: 1. Δ indicates that only parts specified by the manufacturer be used for safety.
2. The S mark indicates service standard parts and may differ from production parts.

Ref. No.	Part No.	Part Name & Description	Per Set	Remarks
INTEGRATED CIRCUITS, TRANSISTORS AND DIODES				
I1	AN7220A	IC	1	
I2	RVILA4125T	IC	1	
I3	LB1405	IC	1	
Q1, 2, 3,	2SC1675	Transistor (Si)	5	
Q5, 6	2SK104	Transistor (Si)	1	
Q4	2SC945	Transistor (Si)	3	
Q7, 8, 9	RVDSD113	Diode (Si)	2	
D1, 2	RVDSD5RLFP3	Diode (Si)	1	S
D3	RVDKB262C	Diode (Si)	1	
D4	RADSPLP1010	LED (Ga)	1	
D5~9	RVDW06B	Diode (Si)	4	
D10~13				
COILS AND TRANSFORMERS				
L1	RLD4Y44	Tuning Coil, FM	1	
L2	RLD4Y53	Oscillator Coil, FM	1	
L5, 6	BLF6F151	Antenna Coil, LW, MW	1	
L7	BLA3M10	Antenna Coil, SW	1	
L8	BL01M4	Oscillator Coil, LW	1	
L9	BL02M6	Oscillator Coil, MW	1	
L10	BL03M31	Oscillator Coil, SW	1	
T1, 4	BLJ14M101	IFT, FM	2	
T2	BLJ12M216	IFT, AM	1	
T3	BLJ12M217	IFT, AM	1	
T5	BLT5K136	Power Transformer	1	A
VARIABLE RESISTORS				
VRL1, 3	EVH0XAFL5A14	Variable Resistor, 10kΩ (A)	2	
VR2	EVH0XAFL5A14	Variable Resistor, 50kΩ (A)	1	
VR4, 6	EVNM4AA00B15	Variable Resistor, 100kΩ (B)	2	S
VR5	EVNK4AA00B24	Variable Resistor, 20kΩ (B)	1	
VARIABLE CAPACITORS				
C4, 11, 11'	RCV4RC2V/L	Tuning Capacitor, w/Trimmer Capacitor CT5~8	1	
C24, 27	RCV2T~16M	Trimmer Capacitor	2	
CTR1~4				
CERAMIC FILTERS				
CF1, 2	RVFSFE10/MSR	Ceramic Filter	2	
CF3	RVFCFM2455D	Ceramic Filter	1	
COMPONENT COMBINATION				
Z1	RXABPWB5	Component Combination	1	



[Fig. 16]



[Fig. 17]

Ref. No.	Part No.	Part Name & Description	Per Set	Remarks	Ref. No.	Part No.	Part Name & Description	Per Set	Remarks
Th1	RRT302	THERMISTOR Thermistor	1		R7, 4, 30, 31, 56	100 k	1/4W Carbon	5	S
		SPEAKERS			R10	ERD25TJ104	220 k	"	S
		Speaker, 12cm (5"), 8Ω Woofer	1		R8, 42	ERD25TJ224	330 k	"	2
		Speaker, 3cm (17/32"), 8Ω Tweeter	1		R40	ERD25TJ334	470 k	"	1
		SWITCHES			R8	ERD25TJ474	560 k	"	1
					R5, 57	ERD25TJ564	150 k	"	1
					R43	ERD25TJ105	1 M	"	2
					R39	ERGLANJ560	56	Metal Oxide	1
S1-1~S1-6	RSR4F022	Switch, Band Switch, Function Selector	1	A	C5	ECCD1H010C	1 P	Value is in MICRO FARADS except P.P=PICO FARADS)	1
S2~S7	RSHX027Z	Voltage Selector	1		C8	ECCD1H270KC	27 P		1
S9	RSR2A01Y				C6, 13	ECCD1H020C	2 P		2
J1	RJU32E	JACKS	1	S	C1, 95	ECCD1H040C	4 P		2
J2	RJU115Z	Jack, Earphone Jack, AC IN	1	A	C10	ECCD1H100KC	10 P		4
J3	RJS15A	Jack, DIN	1		C14	ECCD1H180KC	15 P		1
		RESISTORS (Value is in OHMS)			C11	ECCD1H470KC	47 P		1
R29	ERD25TJ563	56 k	1/4W Carbon		C21, 88	ECCD1H181K	180 P		2
R49	ERD25TJ682	6.8 k	"		C61	ECCD1H120KC	12 P		2
R73	ERD25TJ220	22	"		C71, 75	ECCD1H331K	330 P		3
R60, 2	ERD25TJ562	5.6 k	"		C7, 40,	ECCD1H21K	220 P		1
R59	ERD25TJ104	100 k	"		C12	ECCD1H21K	22 P		4
R55	ERD25TJ105	1 M	"		C2, 9, 70,	ECCD1H20KC	22 P		3
R1, 35	ERD25TJ473	47 k	"		C76	ECKD1H102ZF	0.001		1
R20, 32,	ERD25TJ822	8.2 k	"		C19, 56,	ECKD1H102ZF	0.001		4
R62	ERD25TJ222	2.2 k	"		C63	ECKD1H102MD	0.001		3
R14, 38,	ERD25TJ222	2.2 k	"		C94	ECKD1H102MD	0.001		1
R44	ERD25TJ100	10	"		C26, 39, 43, 84~87	ECKD1H103ZF	0.01		7
R22	ERD25TJ270	27	"		C38	ECKD1H23ZF	0.022		1
R3, 33	ERD25TJ330	33	"		C68	ECKD1H472MD	0.0047		1
R80	ERD25TJ821	820	"		C59	ECKD1H152MD	0.0015		1
R12, 23,	ERD25TJ560	56	"		C31	ECOS05141JJ	140 P		1
R68	ERD25TJ101	100	"		C29	ECOS05221JJ	220 P		1
R9, 13, 21	ERD25TJ151	150	"		C32	ECOS05371JJ	370 P		1
R65	ERD25TJ221	220	"		C35	ECQ505392KZ	3900 P		1
R24	ERD25TJ331	330	"		C78, 80	ECQ505224MZ	0.22		2
R72	ERD25TJ121	120	"		C23, 41,	ECQG05683MZ	0.068		3
R46, 64	ERD25TJ561	560	"		C42	ECFVD223MD	0.022	Semi-Conductor	2
R6	ERD25TJ681	680	"		C38, 49	ECFVD333MD	0.033	"	1
R11, 16, 34,	53, 58	"	"		C17, 47	ECFVD473MD	0.047	"	2
		ERD25TJ102	1 k		C5	C16, 37, 48, 58, 92, 93, 101			1
R27	ERD25TJ152	1.5 k	"		C36, 91	ECFVD683MD	0.068	"	7
R37	ERD25TJ332	3.3 k	"		C83	ECFVD104MD	0.1	"	2
R36, 47, 50,	51, 54, 48	63, 65	"		C66	ECEALCS222	2200	Electrolytic	1
		ERD25TJ103	10 k		C44, 52, 65, 67	ECEALAS471	470	"	1
R70	ERD25TJ124	120 k	"		C30, 34, 45, 64, 96	ECEALAS221	220	"	4
R61	ERD25TJ223	22 k	"		C3, 3	ECEA5023R3	50V	"	5
R71	ERD25TJ823	82 k	"						S
R19	ERD25TJ563	56 k	"						S

Ref. No.	Part No.	Part Name & Description	Per Set	Remarks	Ref. No.	Part No.	Part Name & Description	Per Set	Remarks
C54 C69, 73, 74	ECEALAS101 ECEA1CS330	100 10V Electrolytic	1	S	E12	RUV426Z	Cover, Voltage Selector	1	A
C62 C72, 77	ECEA1HS100 ECEA0JS471	33 16V "	3	S	E13	RMC382Z	Shield Cover	1	
C55 C79, 81	ECEA50Z1 ECEA0JS102	10 50V "	1	S	E14	RMC506Z	Shield Cover, ICL	1	
C46, 50, 57	ECEA50ZRL1 ECEA50ZR22	470 6.3V "	2	S	E15	RDD3383Z	Drum, Dial	1	
C90 C82 C83	ECEA50ZR22 ECEA50N2R2 ECEA1CS222	1 50V "	1	S	E16	RDG5693Z	Gear, Dial	1	
K1	RYMF1410LBsx	Front Cabinet Assembly	1		E17	RDF230Z	Shaft, Band Switch	1	
K1-1	RKX196Z	Handle	1		E18	RDS4090A	Spring, Dial	2	
K1-2	RKX198Z	Arm, Handle	2		E19	RDT2252Z	Shaft, Tuning	1	
K1-3	QBP1817	Stopper, Arm	2		E20	RDZ05Z	Cord, Dial	1	
K1-4	RKX184Z	Washer, Arm	2		E21		ROLL	1	
K1-5	XSB3+6FZ	Screw, Handle M'tg	2		E22	RDP809Z	Pointer, Dial	1	
K2	RYFF1410LBsx	Rear Cabinet Assembly	1		E23	RGK952Z	Indicating Plate, LED	1	
K2-1	RJC505Z	Spring, Battery - Side	1		E24	XSN3+6S	Screw, Function Switch	2	S
K2-2	RJT398A	Connecting Pipe, Spring	2		E25	XUC25FY	Circlip, Band Switch Shaft	2	
K2-3	RJCL11A	Terminal, Battery + Side	2		E26	RMS5Y	M'tg	1	
K3	RYNF1410LBsx	Battery Cover Assembly	1		E27	XTW3+10F	Bracket, Speaker	1	
K4	XBAQCR228EAY	Telescopic Antenna	1		E28	XTW3+12FR	Screw, PC Board etc M'tg	9	
K5	RJT711Z	Terminal, Telescopic Antenna	1		E29	XTN23+8C	Red Screw, Chassis M'tg	5	
K6	RBC279Z	Button, RADIO	1		E30	XNS8	Screw, Voltage Selector M'tg	2	
K7	RBC279Y	Button, AFC/DX-LOCAL	1		E31	XNS9	Nut, Volume M'tg	1	S
K8	RBC279X	Button, METER	1		E32	XTW3+8F	Nut, Tuning Shaft M'tg	1	S
K9	RBC279W	Button, BATT SAVER	1				Screw, AC IN Jack etc M'tg	6	S
K10	RBC279V	Button, LOUDNESS	1						
K11	RBC279U	Button, SOURCE SELECTOR	1						
K12	RDS5104Z	Spring, Button	6						
K13	RFR1119Z	Stopper, Button	6						
K14	REN533Z	Knob, Tuning	1						
K15	REN534Z	Knob, Volume, Tone, Fine	3						
K16	RBS168Z	Tuning	1						
K17	XYN3+F15FZ	Knob, Band	1						
K18	XTB3+35BFN	Screw, Telescopic Antenna M'tg	4	S					
E1	RZAF1410LBsx	Dial Chassis Assembly	1						
E1-1	RFD558Z	Scale, Dial	1						
E2	XBA2C05TR0	Fuse, T500mA	1						
E3	QTF1054	Terminal, Fuse	2						
E4	RJP116Z	Plug, 5 Pin	1						
E5	RJP213Z	Plug, 2 Pin	1						
E6	RDS217Y	Socket, 5 Pin	1						
E7	RJS171Z	Socket, 2 Pin	1						
E8	RJT162Z	Terminal, Socket	7						
E9	RJT202B	Terminal, Earth	2						
E10	RUV482Z	Cover, AC IN Socket	1						
E11	RUV118B	Cover, EP Jack	1						